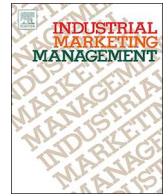




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Research paper

## Analyzing the impact of the coronavirus crisis on business models

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## ABSTRACT

In the light of the current coronavirus crisis, business-to-business firms face a variety of challenges in a complex and fast-changing environment. In order to provide structured analysis and to guide strategic decision-making, we present a novel, five-step approach for analyzing the impact of a crisis on a firm's business model. We applied the approach with eight business-to-business firms and find support for its usefulness. The evidence suggests very different impacts of the coronavirus crisis on business-to-business firms, and that understanding these differences is important for strategizing during the crisis but also to navigating successfully into the future. We also describe six different types of crisis impacts on business models. We conclude by developing managerial implications and questions for future research.

### 1. Introduction

Crises—sequences of events that can have substantial negative consequences for an organization if not properly managed (Coombs, 2007; Pedersen, Ritter & Di Benedetto, 2020)—have been a source of opportunity throughout human history (Bernstein, 1996; Chisholm-Burns, 2010; Goffin & Mitchell, 2010). However, despite the importance of crises for business model changes, the literature on industrial business models has largely overlooked the role of crises in fueling business model innovation (for a general discussion of business model innovation, see, e.g., Foss & Saebi, 2015). The lack of knowledge on this important topic has become particularly evident during the current coronavirus pandemic, as many businesses suddenly find themselves in need of substantial business model adaptation (Ritter & Pedersen, 2020c). We seek to address this gap in the literature while simultaneously providing practical guidance for managers in the current crisis.

Our study is grounded in the emerging stream of literature on the impact of crises on business models. This stream has predominantly focused on the role of business models in the dot-com crash (e.g., Magretta, 2002; Porter, 2001), the impact of the financial crash on (predominantly financial) business models (e.g., Altunbas, Marqués-Ibáñez, & Manganeli, 2011; Hryckiewicz & Kozłowski, 2017), and natural disasters and related crises for businesses, especially as experienced by the tourism sector (e.g., Ritchie, 2004; Tsai & Chen, 2011). We contribute to this stream of research by using a cross-industry study that is fine-tuned for the business-to-business context and

by examining the specifics of the coronavirus crisis. This crisis is unique in terms of its global reach, economic impact, and political influence. In general, we seek to provide new conceptual and empirical insights for the field of industrial marketing with clear implications for practitioners.

Ritter and Lettl (2018) argue that there are five meta-theoretical perspectives on business models: *business-model activities* (i.e., descriptions of firms' activities, e.g., Zairi & Sinclair, 1995, discussing “business process reengineering”), *business-model logics* (i.e., descriptions of businesses' logical flow, e.g., Stabell & Fjeldstad, 1998, introducing “three value creation logics”), *business-model archetypes* (i.e., descriptions of typical models of doing business that transcend industry boundaries, e.g., Baden-Fuller & Haefliger, 2013, collecting different archetypes in a “business model zoo”, [www.businessmodelzoo.com](http://www.businessmodelzoo.com)), *business-model elements* (i.e., descriptions of the essential elements of doing business, e.g., Osterwalder & Pigneur, 2010, offering a “business model canvas” with nine elements), and *business-model alignment* (i.e., descriptions of the interrelationships in and alignment of a business, e.g. Ritter, 2014, introducing “alignment squared”). Of these five meta-theoretical perspectives on business models (Ritter & Lettl, 2018), the alignment perspective is the only one that explicitly and systematically captures the impact of fluctuations in customer demand on value propositions and value demonstrations, and their subsequent effects on capabilities—therewith offering a holistic view on the coherence of a business model. Thus, the alignment perspective not only addresses the elements of a business model, but also the interconnections between elements. As the connection between customers and value propositions

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comprises revenue (who buys what?) and the connection between customers and value demonstrations comprises an omnichannel map of marketing and sales channels for customers and segments (how is the value demonstrated for the various customers?), an alignment perspective captures these fluctuations in its connecting squares and therewith offers a tool for linking four key constructs of business-to-business marketing: customer demand, value proposition, value demonstration, and capabilities. Consequently, we apply the alignment perspective to both study the impact of a crisis on a business model and to establish the diagnosis needed to make effective decisions during a crisis. In particular, we make use of the “alignment squared” business model (Ritter, 2014; Ritter & Pedersen, 2020b, 2020c), as it explains and operationalizes the coherence and interdependence of business-model elements while simultaneously providing the causality-based explanations and predictions necessary for fulfilling the criteria for theoretical reasoning (see, e.g., Ritter & Lettl, 2018; Ritter & Pedersen, 2020a).

We make two key contributions. First, we provide tentative case-based illustrations of how the current coronavirus crisis is affecting business models. As such, we offer real-time research into an unfolding “natural experiment.” This is of academic value because it serves as a first step towards combining the literature on business models with the literature on crisis management in a business-to-business context. Moreover, this is an empirically and methodologically unique setting offering rich insights for future work in this area. As such, our article is also for practitioners, as we provide real-time findings relevant for practice. Second, we adapt a specific perspective on business models (i.e., the alignment model), and we develop a process model for making accurate analyses and assessments, and undertaking subsequent actions in order to manage in the face of the coronavirus crisis. This is important for the business-to-business marketing field, where the potential benefits of combining business models with crisis models have previously been overlooked. It is also important for practitioners, as it provides a theoretically informed and field-tested tool for actively making informed decisions.

The article proceeds as follows. We present the theoretical background on business models in which we define and discuss the construct. Then we focus on the alignment squared model in particular, after which we provide a brief review of the literature on business models during a crisis. Following this, we present the empirical study drawing on insights from eight business-to-business firms during the Covid-19 crises, provide reflections on impact types on business models and discuss managerial implications. We conclude with an overview of directions for future research.

## 2. Business models

### 2.1. Definitions

The concept of business models has been defined in a variety of ways (Table 1). Despite the huge interest in business models among academics and practitioners alike, “there continues to be little agreement on an operating definition” (Casadesus-Masanell & Ricart, 2011, p. 102). As such, the term “business model” is “among the most sloppily used terms in business” (Magretta, 2002, p. 92). Mason and Spring (2011, p. 1033) conclude that the “vast majority of research on business models has treated them as descriptions of how business is done (Chesbrough & Rosenbloom, 2002; Magretta, 2002), identifying the underlying elements or components that detail what the business model is” (see also, e.g., Doganova & Eyquem-Renault, 2009; Mahadevan, 2000).

Such detailed descriptions often involve declarations of important elements (Osterwalder & Pigneur, 2010) but typically fail to specify how those elements are connected. However, the success of a business is arguably defined by connecting dimensions to an efficient flow of inputs through transformation processes and to outputs offered to the

market. In other words, it is defined by how a firm's capabilities are used to convince customers to engage in a transaction, and by how the firm creates and delivers value propositions to customers. While most perspectives agree on the need for coherence in the internal logic and workings of a business model, few explicitly study how coherence and synergies are achieved. Therefore, in this article, we apply the “alignment squared” model, which explicitly includes connections among the dimensions of a business model (Ritter, 2014, illustrated in Fig. 1). In the following, we explain the elements of this model and their alignment.

### 2.2. Elements

#### 2.2.1. Customers

In order to define a business, it is important to specify who the business is serving and who is supposed to benefit from interacting with the firm. Customers, or rather segments of customers, are described in terms of their specific needs (or need bundles). Segmentation deals with “dividing the market into distinct groups of buyers with different needs, characteristics or behavior who might require separate products or marketing mixes” (Kotler, 1991, p. 263). Since the notion of segmentation was first suggested by Smith (1956), the business-marketing literature has discussed various approaches to customer segmentation, including the business buying center (Webster Jr & Wind, 1972), the nested approach (Bonoma and Shapiro, 1984), and contextual segmentation (Freytag & Clarke, 2001).

#### 2.2.2. Value propositions

Another important element of a business model is an organization's value proposition—what it offers to its customers or what it contributes to addressing customer needs. The original discussion of value propositions is regularly attributed to Lanning and Michaels (1988). Despite the extensive use of the term in recent years and comprehensive reviews of the concept (e.g., Eggert, Ulaga, Frow, & Payne, 2018), a precise and general definition of value propositions is still lacking (Ballantyne, Frow, Varey, & Payne, 2011; Skålén, Gummerus, von Koskull, & Magnusson, 2015). Lanning (1998, p. 55) points out that a “value proposition is the entire set of resulting experiences, including some price, that an organization causes some customer to have.” Similarly, “value is always uniquely and phenomenologically determined by the beneficiary” (Vargo & Lusch, 2008, p. 7). Through the exchange of resources, a customer gains access to value-creation potential but not value itself because value is only created when the customer uses the offering (the value-in-use perspective; Anderson, Narus, & Van Rossum, 2006; Grönroos, 2011, Eggert et al., 2018). As such, the exchange of resources carries a value proposition (Ballantyne et al., 2011)—a promise of future value creation by the customer.

#### 2.2.3. Value demonstration

The ways in which organizations attempt to convince customers about the advantages of their value propositions are another important element of business models. An increased focus on value demonstration and value documentation emerged after 1990 when demonstrating value became an explicit and important part of business marketing (e.g., Anderson et al., 2006). Value demonstrations can take different forms and formats, such as personal meetings, trade shows, and social media posts. They can also include value calculations, value modelling (e.g., Anderson & Narus, 1998), and strategic positioning (Collis & Rukstad, 2008; Urbany & Davis, 2007). Thus, managers need to make strategic decisions about which message should be sent via which communication channel to what kind of customer and when.

#### 2.2.4. Capabilities

An economic activity “occurs when one or several actors combine, develop, exchange, or create resources by utilising other resources” (Håkansson & Johanson, 1992, 30). Thus, an economic actor gains

**Table 1**  
Definitions of “business model”.

Author	Definition
Afuah (2004, p. 2)	“It is the set of activities which a firm performs, how it performs them, and when it performs them so as to offer its customers benefits that they want and to earn a profit”
Amit & Zott (2001, p. 511)	“A business model depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities”
Casadesus-Masanell & Ricart (2010, p. 196)	“business models refer to the logic of the firm, how it operates and creates value for its stakeholders”
Magretta (2002, p. 87)	“the story that explains how enterprises work”
Mason & Spring (2011, p. 1032)	“the business model notion was invoked to explain how novel types of business ... would actually make money”
Mitchell & Coles (2004, p. 17)	“A business model is the combination of ‘who’, ‘what’, ‘where’, ‘when’, ‘why’, ‘how’ and ‘how much’ an organization uses to provide its goods and service and develop resources to continue its efforts”
Osterwalder & Pigneur (2010, p. 14)	“describing a rationale of how an organization creates, delivers and captures value”
Timmers (1998, p. 4)	“An architecture for the product, service, and information flows, including a description of the various business actors and their roles; and a description of the potential benefits for the various business actors; and a description of the sources of revenues”
Zott & Amit (2008, p. 219)	“the business model is a structural template that describes the organization of a focal firm’s transactions with all of its external constituents in factor and product markets.”

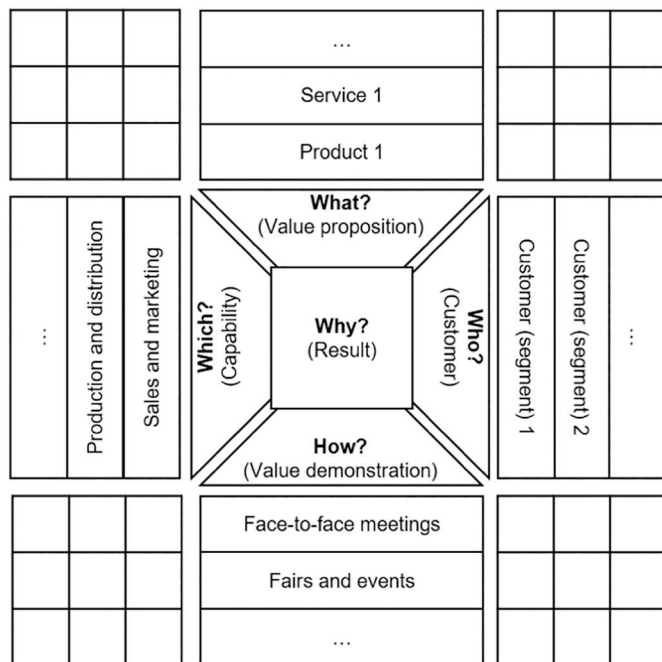


Fig. 1. Alignment squared model (Ritter, 2014).

access to resources, employs those resources in a transformation process, and offers the transformed resources as value propositions in the market. In recent years, firms’ activities have been described as capabilities (for the capability-based view of the firm, see, e.g., Sanchez, 1999). A capability is a qualification and/or skill necessary to perform a certain activity (Day, 1994; Drucker, 1985; Li & Calantone, 1998). Winter (2003, p. 991) defines an organizational capability as “a high-level routine (or collection of routines).” In this regard, organizational capabilities are encapsulated in an organization’s norms, processes and systems, which enable firms to repeat activities over time and, thereby, to sustain their capabilities. Certain elements of the norms, processes and systems might be tacit and, therefore, hard for competitors to copy. Capabilities are organizational routines through which combinations of resources (inputs) are transformed into new resources (outputs). An important business-model assessment revolves around identifying which capabilities are important for success, which capabilities need to be developed, and which capabilities can be neglected.

2.3. Alignment

The four elements do not exist in isolation—they are connected in

terms of which customers are affected by which kind of value demonstration; the (bundle of) value propositions that a customer or segment buys; the capabilities that are needed to develop, build, and deliver value propositions; and the capabilities that drive value demonstration (Fig. 1). The alignment of elements ensures that the right customers are exposed to the right value demonstrations and that customers buy the optimal mix of value propositions. In contrast, a misalignment results in suboptimal operations and repeated market failures.

The quality (or competitiveness) of each element and the alignment of the elements define the objectives that a business model can achieve. Well-developed and well-aligned business models can achieve outstanding financial and societal performance that create both profits and purpose. Less developed and misaligned models fail to deliver good results. At the same time, future objectives frame decisions along the four elements and their alignment in attempts to meet these objectives. However, the elements and the alignment of a business model can be affected and changed by a crisis.

3. Business models during a crisis

According to the Merriam-Webster dictionary ([www.merriam-webster.com](http://www.merriam-webster.com)), a crisis can be defined as “an unstable or crucial time or state of affairs in which a decisive change is impending” and “a situation that has reached a critical phase.” It follows that a crisis may have negative consequences for established business models if it is not effectively managed (Coombs, 2007). However, crises may also bring new opportunities: For example, widely used amenities, such as supermarkets, laundromats, and chocolate chip cookies, were all invented during the Great Depression (Chisholm-Burns, 2010). As evident in these examples, a crisis can often give rise to new business models that encompass new capabilities, new value propositions, and new value demonstrations, and address new customer needs. In the words of Stanford economist Paul Romer in 2004, “a crisis is a terrible thing to waste.”<sup>1</sup> In addition to negative and positive effects of crises on business models, a business model can itself be the cause of a crisis, as is the case when pollution from production creates environmental challenges, overconsumption causes financial distress, and insufficient capabilities result in dissatisfied customers and PR scandals.

The impact of a crisis on business models has been studied outside the domain of business marketing. In general, these contributions often focus on three crisis scenarios: the dot-com crash in 2000, the 2008 financial crisis, and natural disasters, such as the tsunami in the Indian Ocean in 2004 and Hurricane Katrina in 2005. We do not aim to provide a comprehensive review of these streams of literature. Instead, we

<sup>1</sup> <https://www.nytimes.com/2009/08/02/magazine/02FOB-onlanguage-t.html>

discuss results from these studies that have relevant managerial implications for business marketing. While the various crises were drastically different, we argue that insights from different types of crises can be synthesized and compared in order to gain a better understanding of how crises may affect business models. As such, insights from each crisis are relevant.

One of the most prominent examples of business models being affected by a crisis was seen in the dot-com crash. In the 1990s, the concept of business models grew concurrently with the internet in terms of popularity and attention (Osterwalder & Pigneur, 2010). Consequently, when the dot-com crash affected the economy in 2000, many argued that the business model concept was to blame (Porter, 2001). According to Porter (2001), the presence of a business model is no guarantee of success and, as such, business models should be excluded from the business terminology, as a firm's competitive strategy is still the key to its profitability. Others viewed the dot-com crisis as an opportunity to take the concept of business models even more seriously and to clarify its inherent meaning, its differences from strategy, and key criteria for “good” or “bad” business models (e.g., Magretta, 2002). Our general conclusion from this stream of literature is that a business model is a concept that describes the way an organization tries to create value for itself and its stakeholders (customers, suppliers, employees, shareholders, and society), that all organizations have a business model (explicit or implicit), that clarification of an organization's business model is important for effective strategies and operations, and that business models are not in themselves good or bad nor successful or unsuccessful. The dot-com crash highlighted not only the need to understand business models but also the fact that the development of profitable business models is an important managerial task.

The 2008 financial crisis similarly spurred interest in the impact of crises, predominantly in relation to financial business models (e.g., Altunbas et al., 2011; Hryckiewicz & Kozłowski, 2017). One key insight provided by this stream of research is that the impact of a crisis on a given organization depends on differences in the business model. For example, Altunbas et al. (2011) show that an organization's portfolio of value propositions determines its level of success during and after a financial crisis. In particular, they conclude that “the amount of market funding and lack of diversification in income sources also contributed to an increase in realized bank risk” (Altunbas et al., (2011) p. 5; related to value propositions). They also state that “individual banks ... expand to new geographic markets, or gain market share, loosening credit standards in the process (e.g., Dell'Ariceia & Marquez, 2006; Ruckes, 2004)” (pp. 16–17, related to customers). In terms of capabilities, Ellul and Yerramilli (2010), Hryckiewicz and Kozłowski (2017), and Peni and Vähämaa (2012) show that banks with stronger controls on internal risk performed better during and after the financial crisis. In general, these studies suggest that a firm needs to understand its business model and analyze the impact of a crisis based on the design of that particular business model. This also means that the impact of a crisis is (at least in part) firm-specific. From a more general perspective, the financial crisis forced many organizations across industries to streamline their business models and optimize operations in order to derive the efficiencies needed to survive.

Natural disasters and related crises for businesses, especially hotels and travel agencies, have been a subject of major interest in tourism research (e.g., Ritchie, 2004; Tsai & Chen, 2011). While the general focus of these studies is people's safety and returning to “normal,” a more general insight from these studies is the notion of preparedness—the need to develop sufficient plans for handling a crisis and for returning to normal. In so doing, the literature stream has incorporated insights from the fields of risk and disaster management, where risk management seeks to minimize exposure to potential deviations from normal business operations (prior to a crisis), and disaster management largely concerns itself with the management taking place during a disaster (once the crisis has hit). As such, the two areas of research are related. For instance, Ritchie (2004) posits that while

disasters cannot be stopped, their impacts can be limited, if the tourism industry takes a holistic approach to crisis management. Creating contingency plans from e.g. environmental scanning, forecasting, issues analysis, scenario planning, and risk analysis helps in developing organizational preparedness (Ritchie, 2004). Hence, business model resilience is partly built upon the organizational capacity for being prepared for a crisis.

This brief review of the literature on business models and the impact of crises on these models underlines the important role of analyzing business models under a crises. In the following, we present our empirical work in which we analyze business-to-business firms. More specifically, we field tested the alignment model during the current coronavirus pandemic in order to assess the impact of the crisis, and to validate the applicability and relevance of the model and our analytical process in a crisis context.

#### 4. Mapping the impact of the coronavirus crisis on business models

##### 4.1. Interview tool

As the coronavirus crisis and its extensive economic consequences began to emerge, we recognized that executives would need to structure and map the impact of the crisis on their business models. We therefore developed an interview guide based on questions associated with the four quadrants in the alignment squared model. How is revenue affected by the crisis (i.e., which changes do you notice or predict in terms of the value propositions that customers buy, square 1)? Similarly, how does the value demonstration provided to customers change in light of the coronavirus crisis (square 2)? Finally, what impact do the first two changes have on a firm's capabilities (square 3 and 4)? In this regard, we distinguished among operational, ad hoc, and dynamic capabilities (Teece, Pisano, & Shuen, 1997; Winter, 2003).

Motivated by initial discussions and the crisis literature, we focused on three phases in our interviews (see Pedersen, Ritter, Di Benedetto, & Lindgreen, 2020): during the crisis, right after the crisis, and the new normal. The “right after the crisis” phase, which refers to the timeframe in which the market exits crisis mode, may involve extraordinary circumstances for a business model and therewith is not (yet) the new normal. We labelled the post-crisis period as the “new normal,” as we assumed that many areas would not bounce back to the pre-crisis state after the pandemic. We concluded the interviews by asking about the action plans that the interviewees' organizations envisioned. After the interviews, we developed the interview guide into a workbook for managers (Ritter & Pedersen, 2020b, 2020c). Moreover, the interviewees validated the insights from the interviews that were illustrated in the workbook. As such, the format was field-tested and face validated, and the interview insights were verified (see Appendix for further details).

##### 4.2. Interviews

We arranged interviews with eight business-to-business firms in March 2020. Most interviewees were in the midst of a coronavirus lockdown. In other words, the crisis had materialized. The firms operated in a number of industries, including measurement and industrial equipment, building materials, and construction equipment. Their firms all had >500 employees, and most of them had a global footprint in terms of sourcing, production, and sales (Table 2). All information is anonymized to ensure confidentiality.

The interviews were conducted by video conference due to travel restrictions. They lasted up to 60 min, and one to three executives took part in each interview. The two authors and our research project manager participated in all eight interviews. All interviews were video-recorded. The interview guide and the tool was subsequently presented to about 200 executives in four webinars, where it was positioned as a



**Table 2**  
Overview of cases.

Case number	1	2	3	4	5	6	7	8
Domain	B2B	B2B	B2B	B2B	B2B	B2B	B2B	B2B
Industry	Equipment provider	Equipment provider	Industrial equipment	Performance materials	Industrial engineering	Industrial services	Equipment provider	Equipment provider
Operations	Global	Global	Global	Global	Global	Global	Global	Global
Revenue	500–1000 USD	100–500 USD	500–1000 USD	1000–5000 USD	100–500 USD	500–1000 USD	100–500 USD	5000–10,000
Employees	1000–5000	500–1000	5000–10,000	10,000–30,000	1000–5000	1000–5000	5000–10,000	10,000–30,000
Respondent(s) level	Senior Manager(s)	Vice President(s)	Vice President(s)	Senior Manager(s)	Senior Manager(s)	Senior Manager(s)	Vice President(s)	Vice President(s)
Interview duration (recorded part only)	37:20	46:27	38:54	43:21	30:02	39:17	30:09	38:56
Other data sources	Website, annual reports, press coverage	Website, annual reports, press coverage	Website, annual reports, press coverage	Website, annual reports, press coverage	Website, annual reports, press coverage	Website, annual reports, press coverage	Website, annual reports, press coverage	Website, annual reports, press coverage

self-evaluation tool. The webinars helped us test and validate the model's format and the analysis process in an executive setting.

### 4.3. Results

With regard to the who-what square (customers and value propositions), the respondents highlighted the value of the three phases, as revenue changes between them.

“We have changed our service agreements to address customer needs and our people's safety: all preventive maintenance is postponed. There will be a huge back-log of service jobs to be done after the crisis which we are contractually committed to.” (Respondent Alpha).

“In the short term, we see demand going down to 60 or 70 percent and we will recover to 100 percent.” (Respondent Beta).

“There is spiking demand and that will sustain for six months. Once they realize how much they have ordered, and the demand is not out there, this will correct itself approximately six months from now.” (Respondent Gamma).

As illustrated in Fig. 2, different kinds of demand curves were highlighted across the eight cases—demand is rising, stable, or falling, but often converging towards a new normal, which is not always assumed to be at the pre-coronavirus level. As illustrative examples, the curve representing ‘global logistics’ falls immediately during the crisis (similar to hotels, restaurants and airlines in consumer markets) and only comes near index 100 (indicating pre-crisis level) again in the ‘new normal’ phase.

“As our customers are the most impacted by the virus situation, their demand will be falling. It can be a sharp dip but then it comes up to normal; it can be a long dip where it stays down for a while but still comes back; but it can also fall and stay low in a long recession period.” (Respondent Zeta).

In contrast, the curve representing ‘healthcare supplies’ immediately soars during the crisis, while falling a bit in the subsequent phases, before it reaches a new level in the ‘new normal’ phase (comparable to demands for streaming services or online grocery shopping in consumer markets).

“Demand is rising at the moment. But we do not expect higher demands after the crisis, it will be at the same level as before the crisis.” (Respondent Alpha).

In contrast, the ‘construction’ curve has a stable and constant level throughout the three phases as ongoing projects are implemented as planned.

“Regarding large projects, we continue working as normal. No problems at all.” (Respondent Epsilon).

While these examples serve to illustrate idealized demand curves, the interviewees all discussed curves that reflected these archetypical patterns. In addition, the interviewees discussed pulled demand and pushed (that is, postponed) demand: pulled demand occurs when demand is created earlier than normal. For instance, some governments may invest in building renovation and road works ahead of schedule in order to support employment in the construction industry. Hence, the pulled demand curve experiences a rise during the crisis, a decline right after the crisis, and a leveling towards index 100 in the new normal. Pushed/postponed demand was often mentioned as a reaction to an inability to deliver during the crisis (e.g., due to travel restrictions). In pushed demand, customers articulate their willingness to buy right after the crisis. Consequently, the pushed demand curve falls during the crisis, experiences soaring growth right after the crisis, before it reaches a level around index 100 in the new normal (see interview quotes above). As such, pulled and pushed demand curves represent opposite patterns.

All eight cases have more than one curve. In other words, different segments and different value propositions follow different trajectories. This means that our sample features complex alignments and differentiating among them is important for obtaining the details necessary to analyze the business model.

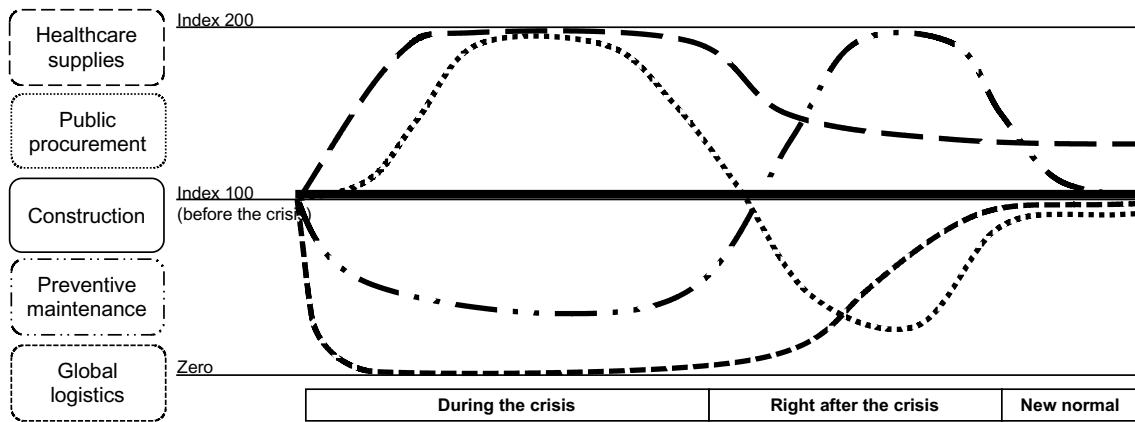


Fig. 2. Revenue development (customer x value proposition alignment).

“One of our segments is following the red curve, immediate fall of demand. We feel that there will be some strength from two other industries because a lot of these projects are well-funded and are going forward regardless of Covid-19. We are seeing increased demand from another industry.” (Respondent Gamma).

“As our customers are the most impacted by the virus situation, their demand is falling. Our different segments are impacted differently, some demand is totally disappearing while others have a slight dip.” (Respondent Zeta).

In addition, no firm reported only falling demand across their customer base and across their portfolio of value propositions, thus business-to-business firms seemed to be more robust in the face of the crisis, as their business models have several parts that were operating well at the time of crisis. As such, the industrial firms had somewhat “crisis-immune” business models, although some were slightly more challenged or uncertain than others.

Interestingly, respondents worked with time in different ways. Some firms did not explicitly work with deadlines for the different phases, while others did not work with specific periods, and other worked with different scenarios—typically scenarios involving short, medium, and long crisis periods.

“It can be a sharp dip but then it comes up to normal; it can be a long dip where it stays down for a while but still comes back; but it can also fall and stay low in a long recession period. We do not have a good prediction on which one is more likely” (Respondent Zeta).

In addition, firms worked with different time periods for their business models. More specifically, we found differences in how long the crisis was expected to affect their business models and how long it would take to reach the new normal, ranging between one and eighteen months for the crisis phase in our sample. As such, it is important to understand the timing associated with a given business model in order to develop a relevant timeframe for strategic action.

From the interviews, a similar picture emerged in relation to the who-how square (customer and value demonstration). Nearly all firms reported a decline in the frequency of personal meetings and trade-show activities due to travel restrictions, and an increase in online and web-based communication or video conferencing (Fig. 3). Where the sales encounters had moved to a digital medium (increase), personal meetings had become non-existent (decline) and websites and brochures were largely constant (stable).

“Recently we had a webinar and 400 people signed up, and 350, 360 people showed up. It is not only that we want to push towards virtual meetings but we also see that there is pull from our customers' side for virtual engagement.” (Respondent Beta).

“We definitely went virtual the past couple of weeks. It is a cultural shift for many of our sales people” (Respondent Gamma).

“A tradeshow is great venue to present the firm, especially in a region which we are starting to build up. And now all are cancelled. And

there is no sign of when they will open again.” (Respondent Epsilon).

“All non-essential travel is gone. A lot of our customers have cancelled meetings or changed them to video meetings.” (Respondent Zeta).

Customer segments are also important for the who-how square (customer and value demonstration).

“We need to distinguish two types of customers: existing and new. Existing customers is fine, they currently have lots of time and they want to talk. We get more information about their plans and their needs; we just have more time to talk right now. New customers are really really difficult. Even though we live in a digital world, face-to-face means a lot. The physical meeting is very important in the beginning of a relationship.” (Respondent Zeta).

Moreover, we found a shared belief that video meetings would be used more extensively after the crisis, while respondents expected personal meetings to become less frequently used—despite the notion that personal meetings will also be very important to build customer relationships in the new normal. As such, some value demonstrations are unlikely to return to an index of 100 after the crisis, with video conferences ending well above 100 and personal meetings below that level.

With respect to capabilities, the interviews revealed changes in volume as a consequence of the crisis, with some capabilities reduced (e.g., sales due to travel restrictions), some staying stable, and some increasing (e.g., online, Internet of Things, delivery services). Moreover, several companies viewed the idle sales time as an opportunity to develop capabilities and to train the salesforce. In this respect, the three phases were again viewed as meaningful, as the demands on capabilities changed over time.

“We have had web-based training in the past. But in terms of the professionalism of that training, I have always questioned if we really delivered what the customer wants and expects. Since the people who create the content of the training are not travelling at the moment, they can look at the content and standardize and harmonize content.” (Respondent Beta).

“We remind sales people about our internal sales training, for example how to sell services.” (Respondent Alpha).

Interestingly, many firms named an earlier crisis as a reference point when explaining why certain processes were established to help them through the crisis. Exposure to a crisis seems to create a need to be prepared for similar events. In particular, mistakes made in earlier crises were mentioned as important for learning and for preventing similar mistakes in the face of this crisis. In relation to capabilities, it could be argued that such exposure to earlier crises might have given rise to a so-called “crisis capability”.

At the end of the interview, we collected the arguments into a chart detailing the objectives (what can be achieved in each phase) and activities for each phase (Fig. 4). Again, significant differences were

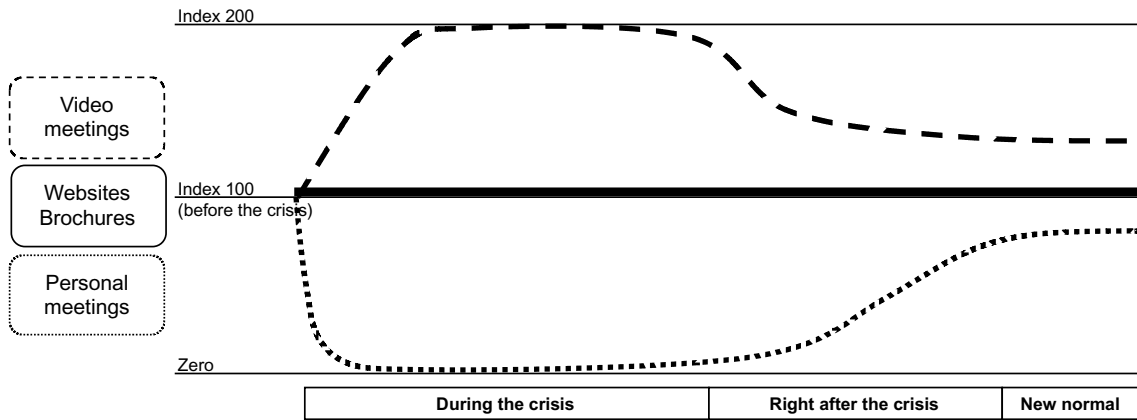


Fig. 3. Omnichannel development (customer x value demonstration alignment).

evident across the three phases. The interviewees described this exercise and the resulting chart as useful for structuring the results of the analysis.

5. Reflections on impact types

Using an abductive/retroductive logic from the case analyses (Douven, 2017; Kovács & Spens, 2005), we inferred six different types of crisis impacts, which describe different ways a crisis may influence a business model or parts thereof. The abductive/retroductive reasoning followed the process specified by Kovács and Spens (2005), where a creative interaction between theory and data unfolds (see the Appendix for an illustration of this process). According to Kovács and Spens (2005, p. 138), “abductive reasoning emphasizes the search for suitable theories to an empirical observation”, illustrating our applied approach

to identify impact types. Here, we iterated between the findings from the interviews and the literature on crisis impacts on business models, including resilience and vulnerability. Once these impact types were identified, we used them in a webinar setting to test the typology’s verisimilitude.

We identified these types during our case analyses and offer this typology as an overall assessment tool for executives, who can ask themselves the following questions: Which type of business-model reaction am I facing? What kind of management issues must be tackled in this situation? In this typology (Fig. 5), we distinguish between resilient and vulnerable business models. Resilience is defined as the ability to respond productively to significant change (Horne III & Orr, 1998) and to cope with unanticipated dangers after they have become manifest (Wildavsky, 1991; for an overview, see Manyena, 2006). We use resilience to define business models that can cope with a crisis. Vulnerable

Objective	- Safeguard people - Keep production running - Serve customers		- Follow the strategy set before the crisis
Customers			
Value proposition	- Postpone strategic building projects - Continue digitalization		
Value demonstration	- Focus on ‘inside sales’		- More virtual interaction
Capability	- Start e-invoicing	- Develop capability in rebuilding factory without being on site	- More automation of production (factory of the future)
	During the crisis	Right after the crisis	New normal

Fig. 4. Example of filled out action plan.

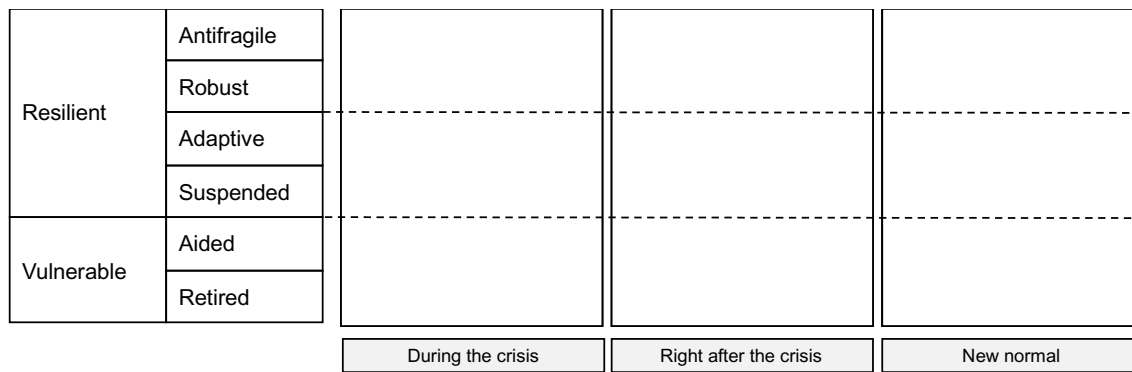


Fig. 5. Impact types.

business models cannot cope with a crisis on their own, hence their survival depends on outside help. In the following, we describe the six impact types.

5.1.1. Antifragile business models

This type of business model exhibits better performance during a crisis. As Taleb (2012) points out, some systems and business models actually improve under stress and can better realize their potential in a crisis situation. Some of our interviewees indicated that certain capabilities that were considered costly, complex, and unproductive before the crisis became important after the crisis hit. Examples include online and remote-access capabilities; global distribution of production, service, and leadership; and excess capacity in warehouses, production, and the storage of spare parts. The managerial issues relate to detecting the fact that the business model has found a favorable environment and accelerating the business model.

5.1.2. Robust business models

Robustness is the ability of a system (a business model in our case) to remain in the desired operational state during a crisis (for a discussion in engineering, see, e.g., Johnson & Gheorghe, 2013; for a discussion in biology, see, e.g., Stelling, Sauer, Szallasi, Doyle III, & Doyle, 2004; Kriete, 2013). Our cases highlight many areas in these business models that were not affected by the crisis as well as areas in which the crisis changed only the volume and not the business model itself. In some business models, volume increased (e.g., in the IT and logistics industry), while volume decreased in other models (e.g., among facility-management firms). The managerial issues with this type are ensuring the continuation of the business (e.g., by protecting people from infection) and managing the changes in volume (e.g., by ensuring supply chain stability and managing the human resource capacity).

5.1.3. Adaptive business models

Some business models need to change in light of a crisis. For instance, they may need to address urgent needs in healthcare (e.g., mask, PPE, and ventilator production). Industrial services may need to shift from on-site services to remote services, and educational institutions may need to move from in-class training to online training. While adapting the business model may be costly and intense, the business quickly reemerges in a sustainable way. The managerial issues in this regard are spotting the opportunities for business model development and quickly implementing those initiatives.

5.1.4. Suspended business models

Another type of impact is the temporary closure of a business model with the intention of reopening it after the crisis. Our cases provided various examples of this type and other examples are well documented in the business press—car manufacturing lines are on pause, and the

hospitality and entertainment sectors are temporarily on hold. Two key assumptions for these business models are that: (1) the business model will be up and running profitably again after the crisis; and (2) it is better to invest in the suspension period than to dissolve the business and start a new venture afterwards. The key managerial issues in this type of business model are securing enough capital to finance the period of closure and securing access to resources, especially human resources, after the business model is restarted.

5.1.5. Aided business models

When a business model is unable to support itself in a crisis, it may depend on outside support. Governments are offering substantial aid programs with the aim of supporting vulnerable business models, investors are offering funding for their firms, and management teams are negotiating support deals with banks. Similar to suspended business models, the key assumption here is that the business model will be successful after the crisis and that the outside aid is justified relative to the alternatives (e.g., unemployment, civil instability, unavailability of the business model after the crisis, loss of investments). The managerial tasks in this case include presenting the business model as worthy of aid, identifying and applying for aid, and preserving the business model for later revival.

5.1.6. Retired business models

This type of business model ceases to exist during the crisis, as the cost of getting the business model through the crisis exceeds the potential profits after the crisis. In such situations, it is more meaningful to exit the business model and start fresh after the crisis. Alternatively, a business model may become permanently outdated after a crisis or its outdatedness may be highlighted by a crisis. The managerial issue here revolves around organizing an orderly shutdown and exit.

The firms we examined had elements of types 1 to 4. In other words, parts of the businesses actually benefitted from the crisis, while other parts were either not affected or only moderately affected. However, the interviewees noted that types 5 and 6 do exist, predominantly in other industries or among their competitors. They also indicated that the length of the crisis will determine whether parts of the business model will shift to a different type, including types 5 and 6. We have indicated this insight in Fig. 5 with a timeline so that managers can discuss the point at which a business model may change type. For example, suspended business models may become aided business models if the lockdown continues longer than a firm's capital can support suspension.

6. Managerial implications

Feedback from the interviewees and webinar participants indicates that the proposed analysis model is a useful tool for capturing the impact of the coronavirus crisis on business models of business-to-business firms. Interviewees described the tool as useful, well structured, and



offering interesting questions, especially questions that might otherwise have been overlooked. As such, managers can use this structured approach to assess the impact of the crisis in five steps.

First, we suggest starting with the “old” business model—the model before the crisis. This to ensure that the period of crisis does not blur the vision of what worked and what did not prior to the crisis. The inclusion of the model's results prior to the crisis (i.e., achieved objectives) is important, as it helps acknowledge not only the well-functioning parts of the business model but also those areas that were suboptimal pre-crisis. One challenge for executives, owners, and public crisis support and relief schemes is to determine which business challenges are related to the coronavirus crisis and which challenges existed prior to the crisis.

Second, the analysis of revenue (the who-what square) offers a projection of cashflow and highlights which customers to focus on and which value propositions are important and thus need ensured supply. Third, an analysis of value demonstration indicates how a business can come into contact with customers and convince them to buy. Fourth, the examination of the impact on capabilities will indicate whether the revenue and channel expectations are aligned with the organization's capabilities. These three analyses constitute an iterative process that can ensure alignment of the entire business model (i.e., in all four quadrants).

Fifth, the first four steps will uncover various opportunities to respond to the crisis. These options need to be prioritized and orchestrated into a consistent action plan, as suggested above. In this step, reflections on the type of impact that the crisis has on the business model (or parts of the business model) will also be helpful.

In all steps of crisis management, timespans are important. While no one can say with certainty when this crisis will be over, managers need to explicitly think of the timespans for which their decisions are valid. For example, how long can a business finance itself given current losses? Under which conditions will a robust business model be challenged and change to a different type? Overall, a structured approach to strategizing and implementing crisis management is recommended.

Notably, the process explained above is circular. As such, it is a continuous process in which new analyses must be undertaken following each decision. This also suggests that a crisis offers learning opportunities in which an organization can learn both during and after the crisis, and it can use that knowledge to prepare itself for new crises.

## 7. Additional research questions and outlook

In this article, we present a unique tool for assessing the impact of a crisis on a business model. While we suggest that the model and the process can be used by all types of organizations and for different types of crises, the relevance of such generalizations can only be assumed at this point. Therefore, further support for this approach based on

### Appendix A. Appendix

#### Interview guide:

As the interviews were conducted online, questions were asked following the structure of the alignment model in a slideshow format. Below we present the questions.

1. Do you observe any changes among your customers due to the coronavirus crisis?

- Decreasing, stable or increasing demand during or after the crisis?
- Stable or changing customer needs during or after the crisis?

2. Do you experience any changes in your value propositions due to the coronavirus crisis?

- Decreasing, stable or increasing demand during or after the crisis?
- Are there any new or terminated value propositions?

3. Do you experience any changes in your value demonstrations due to the coronavirus crisis?

empirical evidence is desirable.

While we are still in the midst of the coronavirus crisis, it is important to look forward and plan ahead. As such, we need to better understand how decisions made during the crisis affect post-crisis performance. Some decisions, including those related to the loss of profits, may become foundations of strength after the crisis (e.g., customer loyalty). Moreover, decisions made early in the crisis may “lock in” organizations to a certain path dependent trajectory, not always in line with the later developments of a crisis. We need a better understanding of these interrelationships.

As we have briefly alluded to, there is a difference between facing challenges *during* the coronavirus crisis and facing challenges *because of* that crisis. While the semantic difference is small, the business implications are significant: the former can also be triggered by pre-existing weaknesses in the business model and by a managerial inability to address those weaknesses prior to the crisis. The question is how executives and politicians offering crisis support can identify the challenges created by the crisis so that they do not support unprofitable business models.

The coronavirus crisis highlights differences in businesses' crisis preparedness (Pedersen & Ritter, 2020). An important topic for future research is the optimal level of preparedness. In other words, to which degree should organizations invest in crisis preparedness? Preparedness comes at a cost in terms of both investments and managerial attention. However, without an awareness of the need to be prepared, business models would be at risk. In the future, investors will be more aware of such risks, as the current crisis will expose many of them. Therefore, there will be a new rationale for organizations to rethink their risk-management approaches and the solutions in which they invest to address those risks.

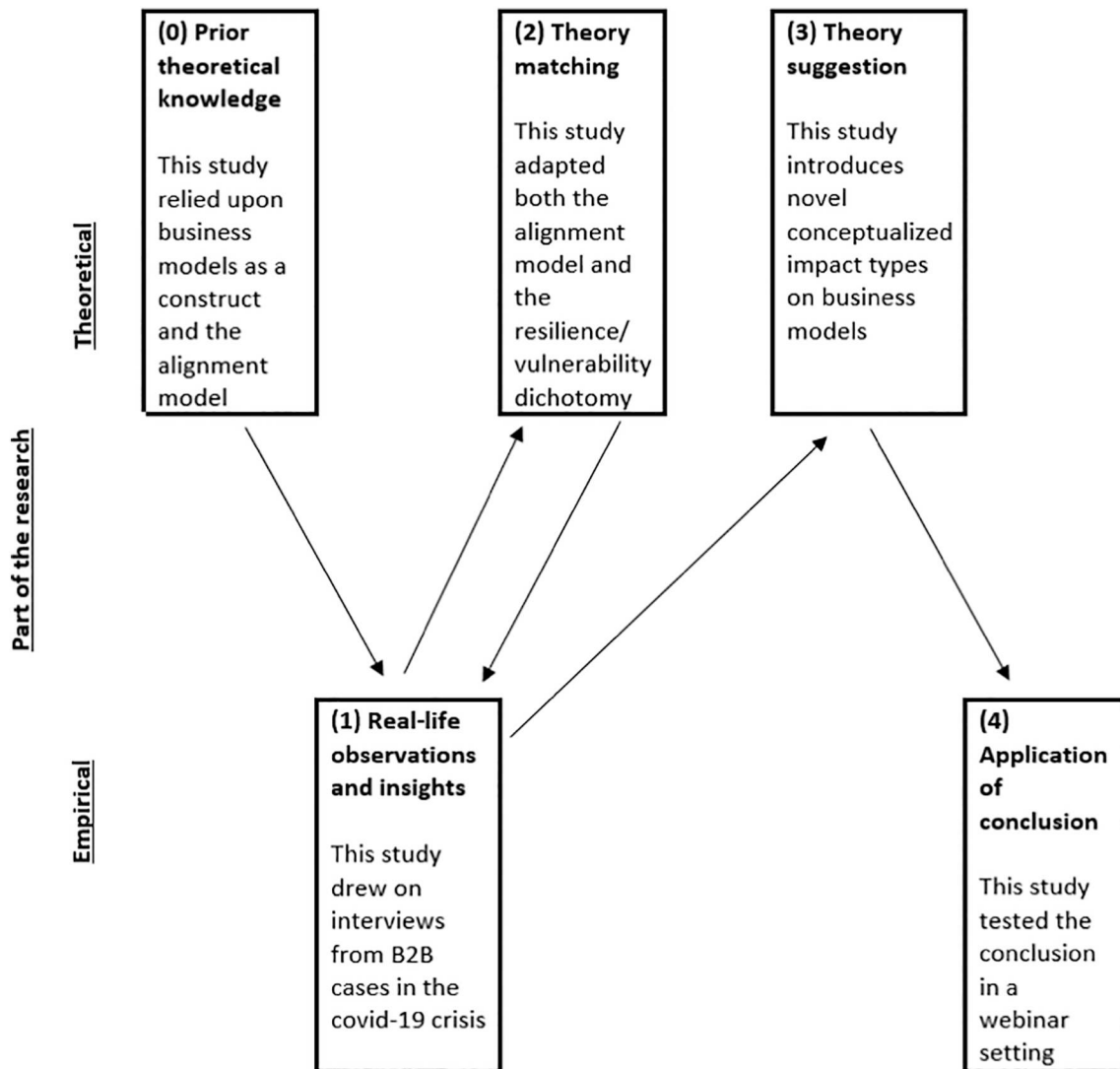
Finally, in this article, we have focused solely on organizations' business models. As such, we have not addressed the role relationships with other actors in organizations' ecosystem. Those business relationships are vital for any business. In the face of the current crisis, some firms are helping their network partners by, for instance, offering better payment conditions, while others constrain their partners by tightening conditions. Consequently, changes in a firm's business model has implications for its relationships and potentially impose changes in other actors' business models. Therefore, there is ample opportunity for additional contributions from a business model perspective on managing successfully through a crisis.

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- Decreasing, stable or increasing uses of communication channels during or after the crisis?
  - Are there any new or terminated channels?
4. Do you experience any changes in your capabilities due to the coronavirus crisis?
- Decreasing, stable or increasing demand or relevance for capabilities during or after the crisis?
  - Are there any newly developed capabilities?
5. How is the alignment in your business model being affected by the coronavirus crisis?
6. What can you achieve during and after the crisis?
7. What are your plans for the different elements in your business model?
8. What is your top priority at the moment?
9. Which projects do you need to launch and manage after the crisis?
10. Is there anything you wish you would have done differently prior to the crisis?

The study's abductive/retroductive approach (adapted from Kovács & Spens, 2005).



- (0): Prior knowledge of business models in a crisis.
- (1): The empirical anomaly of the Covid-19 crisis for the eight B2B firms.
- (2): Matching different theories to understand crisis impact on business models.
- (3): Suggesting a new typology for determining the crisis impact.
- (4): Applying the framework in an executive setting (webinar) to test its verisimilitude.

## References

- Afuah, A. (2004). *Business models: A strategic management approach*. Irwin: McGraw-Hill.
- Altunbas, Y., Marqués-Ibáñez, D., & Manganello, S. (2011). *Bank risk during the financial crisis: Do business models matter? ECB Working Paper, No. 1394*. Frankfurt/Main.
- Amit, R., & Zott, C. (2001). Value creation in E-business. *Strategic Management Journal*, 22(6–7), 493–520. <https://doi.org/10.1002/smj.187>.
- Anderson, J. C., & Narus, J. A. (1998). Business marketing: Understand what customers value. *Harvard Business Review*, 76(6), 53–65.
- Anderson, J. C., Narus, J. A., & Rossum, W. V. (2006). Customer value propositions in business markets. *Harvard Business Review*, 84(3), 1–4.
- Baden-Fuller, C., & Haefliger, S. (2013). Business models and technological innovation. *Long Range Planning*, 46(6), 419–426.
- Ballantyne, D., Frow, P., Varey, R. J., & Payne, A. (2011). Value propositions as communication practice: Taking a wider view. *Industrial Marketing Management*, 40(2), 202–210.
- Bernstein, P. L. (1996). *Against the gods: The remarkable story of risk*. New York: John Wiley & Sons.
- Casadesu-Masanell, R., & Ricart, J. E. (2011). How to design a winning business model. *Harvard Business Review*, 89(1/2), 100–107.
- Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529–555.
- Chisholm-Burns, M. A. (2010). A crisis is a really terrible thing to waste. *American Journal of Pharmaceutical Education*, 74(2), 19.
- Collis, M. D., & Rukstad, D. J. (2008). Can you say what your strategy is? *Harvard Business Review*, 86(4), 82–90.
- Coombs, W. T. (2007). Protecting organization reputations during a crisis: The development and application of situational crisis communication theory. *Corporate Reputation Review*, 10(3), 162–176.
- Day, G. (1994). The capabilities of market-driven organizations. *Journal of Marketing*, 58(October), 37–52.
- Dell'Ariccia, G., & Marquez, R. (2006). Lending booms and lending standards. *Journal of Finance*, 61(5), 2511–2546.
- Doganova, L., & Eyquem-Renault, M. (2009). What do business models do?: Innovation devices in technology entrepreneurship. *Research Policy*, 38(10), 1559–1570.
- Douven, I. (2017). Abduction. In E. N. Zalta (Ed.). *The Stanford Encyclopedia of Philosophy (Summer 2017, p. online)*. Stanford: Metaphysics Research Lab, Stanford University.
- Drucker, P. (1985). *Innovation and entrepreneurship: Practice and principles*. New York: Harper and Row.
- Eggert, A., Ulaga, W., Frow, P., & Payne, A. (2018). Conceptualizing and communicating value in business markets: From value in exchange to value in use. *Industrial Marketing Management*, 69(2), 80–90. <https://doi.org/10.1016/j.indmarman.2018.01.018>.
- Ellul, A., & Yerramilli, V. (2010). *Stronger risk controls, lower risk: Evidence from US bank holding companies (No. Working Paper No. 16178)*.
- Foss, N. J., & Saebi, T. (2015). *Business model innovation: The organizational dimension*. Oxford: OUP.
- Freytag, V., & Clarke, A. H. (2001). Business to business market segmentation. *Industrial Marketing Management*, 30(6), 473–486.
- Goffin, K., & Mitchell, R. (2010). *Innovation management*. Hampshire: Palgrave Macmillan.
- Grönroos, C. (2011). A service perspective on business relationships: The value creation, interaction and marketing interface. *Industrial Marketing Management*, 40(2), 240–247.
- Håkansson, H., & Johanson, J. (1992). A model of industrial networks. In B. Axelsson, & E. Geoff (Eds.). *Industrial networks: A new view of reality* (pp. 28–34). London: Routledge.
- Horne, J. F., III, & Orr, J. E. (1998). Assessing behaviours that create resilient organisations. *Employment Relations Today*, 24(4), 29–39.
- Hryckiewicz, A., & Kozłowski, Ł. (2017). Banking business models and the nature of financial crisis. *Journal of International Money and Finance*, 71, 1–24.
- Johnson, J., & Gheorghe, A. V. (2013). Antifragility analysis and measurement framework for systems of systems. *International Journal of Disaster Risk Science*, 4(4), 159–168.
- Kotler, P. (1991). *Marketing management: Analysis, planning, implementation and control* (7th ed.). Englewood Cliffs: Prentice Hall.
- Kovács, G., & Spens, K. M. (2005). Abductive reasoning in logistics research. *International Journal of Physical Distribution and Logistics Management*, 35(2), 132–144.
- Kriete, A. (2013). Robustness and aging: A systems-level perspective. *Biosystems*, 112(1), 37–48.
- Lanning, M. (1998). *Delivering profitable value*. New York: Perseus Publishing.
- Lanning, M., & Michaels, E. (1988). *A business is a value delivery system*. (McKinsey Staff Paper).
- Li, T., & Calantone, R. J. (1998). The impact of market knowledge competence on new product advantage: Conceptualization and empirical examination. *Journal of Marketing*, 62(4), 13.
- Magretta, J. (2002). Why business models matter. *Harvard Business Review*, 80(5), 86–92.
- Mahadevan, B. (2000). Business models for internet-based ecommerce: An anatomy. *California Management Review*, 42(4), 55–69.
- Manyena, S. B. (2006). The concept of resilience revisited. *Disasters*, 30(4), 433–450.
- Mason, K., & Spring, M. (2011). The sites and practices of business models. *Industrial Marketing Management*, 40(6), 1032–1041.
- Mitchell, D. W., & Coles, C. B. (2004). Business model innovation breakthrough moves. *Journal of Business Strategy*, 25(1), 16–27.
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*. J. W. & Sons, Ed.
- Pedersen, C. L., & Ritter, T. (2020). Preparing Your Business for a Post-Pandemic World. *Harvard Business Review* HBR.org digital article.
- Pedersen, Carsten Lund, Ritter, Thomas, & Anthony Di Benedetto, C. (2020). Managing through a Crisis: Managerial Implications for Business-to-Business Firms. *Industrial Marketing Management* forthcoming in this issue.
- Peni, E., & Vähämaa, S. (2012). Did good corporate governance improve bank performance during the financial crisis? *Journal of Financial Services Research*, 41(1–2), 19–35.
- Porter, M. E. (2001). Strategy and the internet. *Harvard Business Review*, 79(3), 62–78.
- Ritchie, B. W. (2004). Chaos, crises and disasters: A strategic approach to crisis management in the tourism industry. *Tourism Management*, 25(6), 669–683.
- Ritter, T. (2014). *Alignment squared: Driving competitiveness and growth through business model excellence*. Frederiksberg: CBS Competitiveness Platform.
- Ritter, T., & Lettl, C. (2018). The wider implications of business-model research. *Long Range Planning*, 51(1), 1–8.
- Ritter, T., & Pedersen, C. L. (2020a). Digitization capability and the digitalization of business models in business-to-business firms: Past, present, and future. *Industrial Marketing Management*, 86(4), 180–190.
- Ritter, T., & Pedersen, C. L. (2020b). *The impact of the corona crisis on your business model: Workbook*. Denmark: Frederiksberg.
- Ritter, T., & Pedersen, C. L. (2020c). Assessing Coronavirus's impact on your business model. *Harvard Business Review* HBR.org digital article.
- Ruckes, M. E. (2004). Bank competition and credit standards. *Review of Financial Studies*, 17(4), 1073–1102.
- Sanchez, R. (1999). Modular architectures in the marketing process. *Journal of Marketing*, 63(4 (special issue)), 92–111.
- Bonoma, T. V., & Shapiro, B. P. (1984). Evaluating market segmentation approaches. *Industrial Marketing Management*, 13(4), 257–268.
- Skälén, P., Gummerus, J., Von Koskull, C., & Magnusson, P. (2015). Exploring value propositions and service innovation: A service-dominant logic study. *Journal of the Academy of Marketing Science*, 43(2), 137–158.
- Smith, W. R. (1956). Product differentiation and market segmentation as alternative marketing strategies. *Journal of Marketing*, 21(1), 3–8.
- Stabell, C. B., & Fjeldstad, Ø. D. (1998). Configuring value for competitive advantage: On chains, shops, and networks. *Strategic Management Journal*, 19(5), 413–437.
- Stelling, J., Sauer, U., Szallasi, Z., Doyle, F. J., III, & Doyle, J. (2004). Robustness of cellular functions. *Cell*, 118(6), 675–685.
- Taleb, N. N. (2012). *Antifragile: Things that gain from disorder*. New York: Random House.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533.
- Timmers, P. (1998). Business models for electronic markets. *Electronic Markets*, 8(2), 3–8.
- Tsai, C.-H., & Chen, C.-W. (2011). The establishment of a rapid natural disaster risk assessment model for the tourism industry. *Tourism Management*, 32(1), 158–171.
- Urbany, J. E., & Davis, J. H. (2007). Strategic insight in three circles. *Harvard Business Review*, 85(11), 28–30.
- Vargo, S. L., & Lusch, R. of the A. of M. S. F (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science*, 36(1), 1–10.
- Webster, F. E., Jr., & Wind, Y. (1972). A general model for understanding organizational buying behavior. *Journal of Marketing*, 36(2), 12–19.
- Wildavsky, A. (1991). *Searching for safety*. New Brunswick, NJ: Transaction.
- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991–995.
- Zairi, M., & Sinclair, D. (1995). Business process re-engineering and process management: A survey of current practice and future trends in integrated management. *Management Decision*, 33(3), 3–16.
- Zott, C., & Amit, R. (2008). The fit between product market strategy and business model: Implications for firm performance. *Strategic Management Journal*, 29(1), 1–26.